Fig. 1

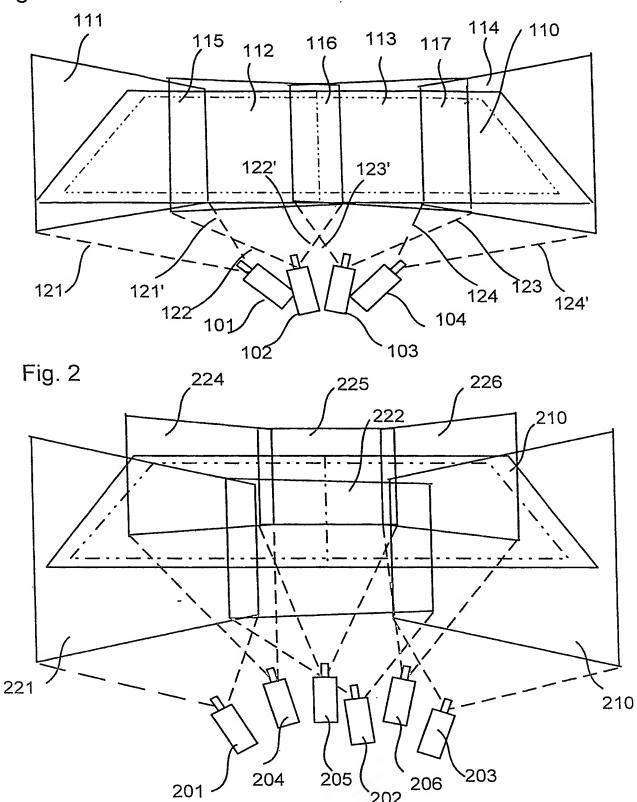


Fig. 3a

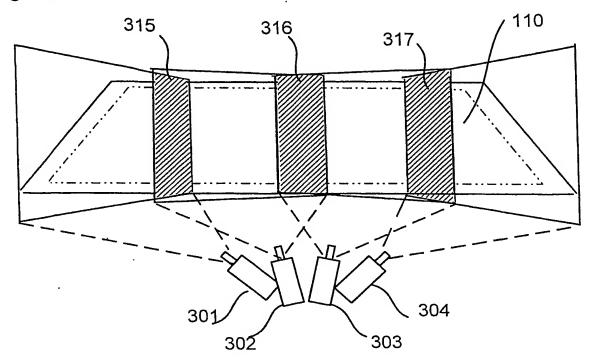
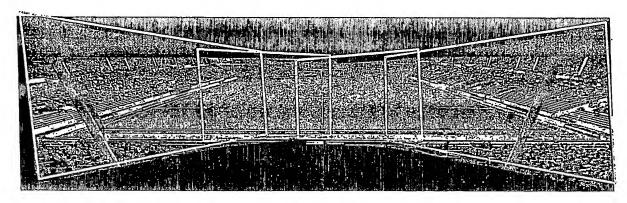
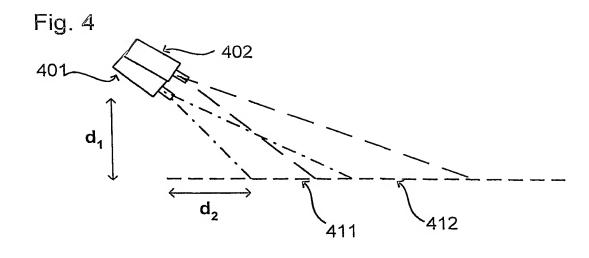


Fig. 3b





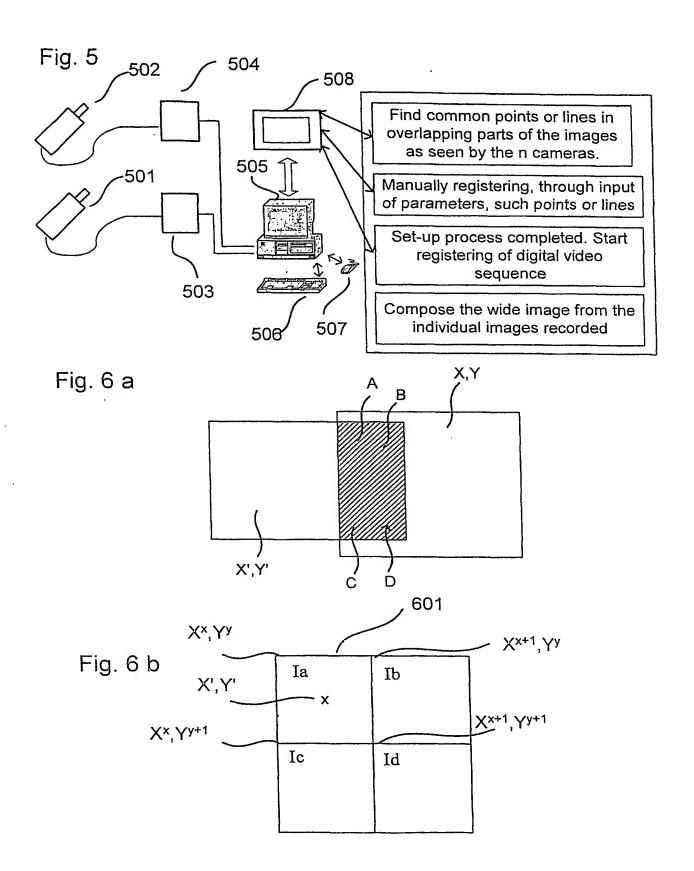


Fig. 6c

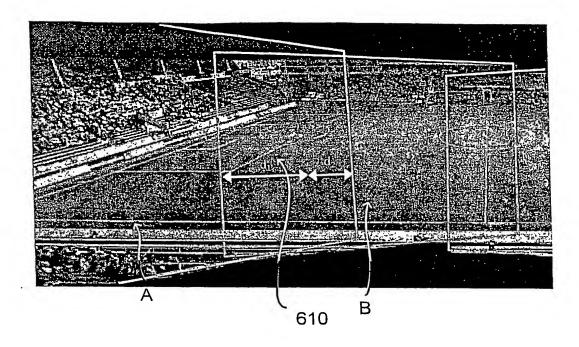


Fig. 6d

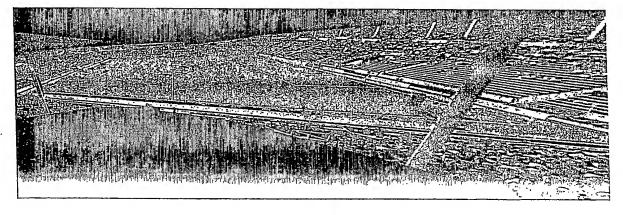
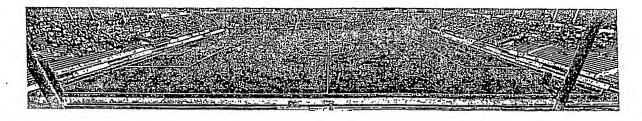
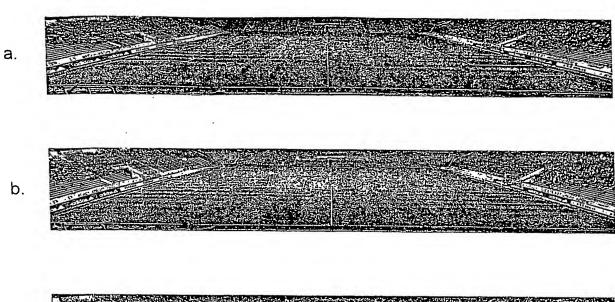


Fig. 6e

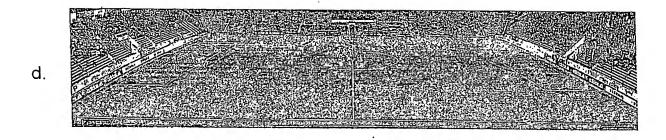


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Fig. 7







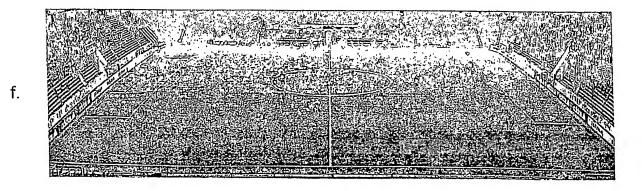


Fig. 8

Set up the cameras, preferably more than two, to cover approximately even areas giving an angle view of approximately 120 -160 degrees.

Chose a reference camera.

Identify manually a predetermined number of common points in an overlap region of a picture from the reference camera and the nth camera.

Calculate X'_n and Y'_n , where n is the nth camera, using

formulas: $X' = \frac{aX + bY + c}{dX + eY + f}$ and $Y' = \frac{gX + hY + i}{dX + eY + f}$

Repeat for all cameras up to the "nth" camera. Form a matrix for the corresponding X'_n and Y'_n and X and Y to be used in reproducing the further frames of the sequence

Determine the integers X^*, Y^* corresponding to X_n and Y_n . Add to the matrix. Use the integers for calculating a weighted picture value to be applied to corresponding X, Y in the wide picture.

Apply separate transformations to the X and Y coordinates, providing X+ and Y+ in order to transform the final picture such that straight lines appear as straight as possible.

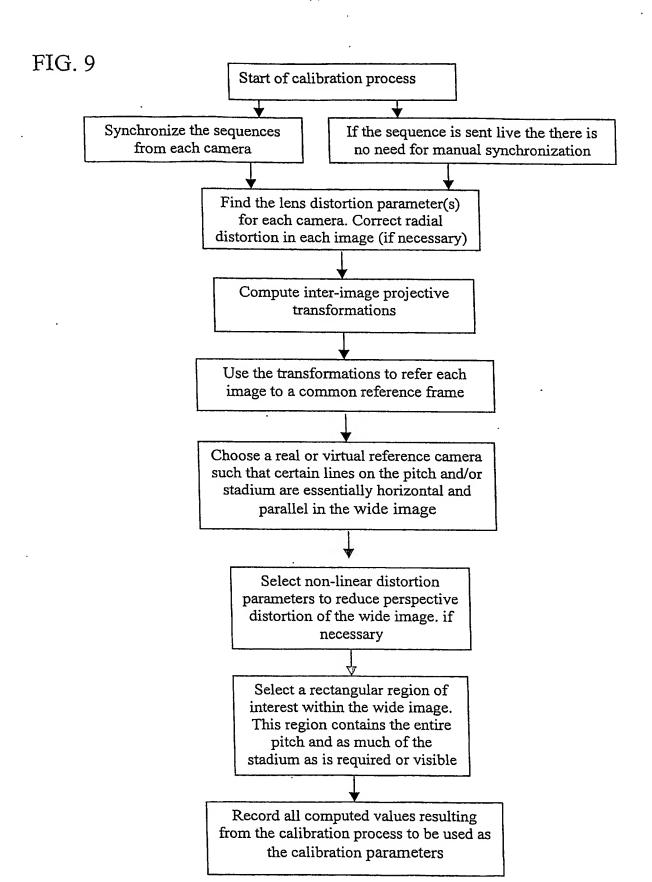


FIG. 10

Apply the computed and registered calibration parameters

For each pixel in the panoramic image, compute and store parameters describing

- Which pixels from which image(s) contribute to this pixel in the panoramic image
- How much these pixels each contribute to the panoramic image

Until the end of the sequence is reached

Obtain one new image from each camera, either from a live source or a memory

If required, update the parameters needed to transform intensities (colours/brightness) in one or more cameras to eliminate visible seams

If necessary, adjust the intensities (colours/brightness) in the images from one or more cameras.

Create the current seamless, wide image from the current images from each camera

Output the wide image to a display or to a (possibly compressed) storage

End of sequence

Fig. 11

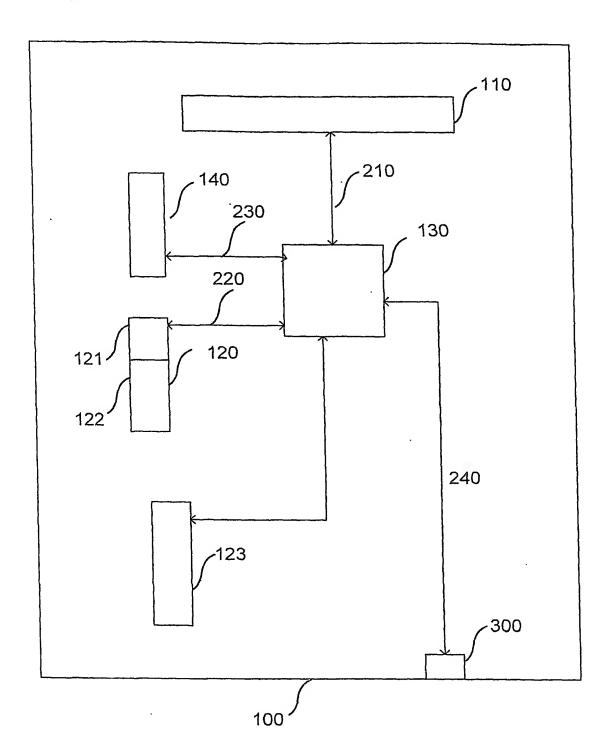


Fig. 12a

